Application No.: 10/714,966 Docket No.: 20140-00308-US1

AMENDMENTS TO THE CLAIMS

1. (previously presented) A composite material comprising:

a layer containing copper; and

an electrodeposited CoWP film on the copper layer, wherein the CoWP film contains from 13.2 atom percent to 25 atom percent phosphorus and has a thickness from 5 nm to 200 nm.

2. (Original) The composite material of claim 1 wherein the CoWP film contains from 3 atom percent to 10 atom percent tungsten as measured by Rutherford backscattering spectroscopy.

3. (currently amended) The composite material of claim 1 wherein the CoWP film consists essentially of $Co_xW_yP_z$, wherein $0.75 < x < 0.85$; ~~and $z = (1-(x+y))$~~ and $x + y + z = 1$ as measured by Rutherford backscattering spectroscopy.

4. (currently amended) The composite material of claim ~~3~~ 1 wherein ~~$0.77 < x < 0.83$~~ $0.02 < y\ 0.06$ and $x + y + z = 1$ as measured by Rutherford backscattering spectroscopy.

5. (Original) The composite material of claim 1 wherein the copper layer is disposed between the CoWP film and a metal layer.

6. (Original) The composite material of claim 5 wherein the copper layer and the metal layer is disposed within a trench or via of a dielectric material.

7. (Original) The composite material of claim 6 further comprising a metal cap layer on the CoWP film, wherein the CoWP film and the metal cap layer are disposed within the trench or the via of the dielectric material.

8. (Original) The composite material of claim 1 wherein the CoWP film has a thickness from 5 nm to 50 nm.

9. (Original) The composite material of claim 1 wherein the CoWP film has a thickness from 10 nm to 30 nm.

10. (Original) The composite material of claim 1 wherein the atom percent phosphorous is measured by Rutherford backscattering spectroscopy.

11.-31. Canceled

32. (previously presented) An interconnect structure comprising:

a trench or a via disposed within a dielectric material, wherein the trench or via is filled with a metal layer disposed along the sidewalls of the trench or the via, and a conducting layer containing copper; and

an amorphous electodeposited CoWP film on the copper layer, wherein the CoWP film contains 13.2 atom percent to 25 atom percent phosphorus and has a thickness from 5 nm to 200 nm.

33. (Original) The interconnect structure of claim 32 wherein the CoWP film contains from 3 atom percent to 10 atom percent tungsten as measured by Rutherford backscattering spectroscopy.

34. (currently amended) The interconnect structure of claim 32 wherein the CoWP film consists essentially of $Co_xW_yP_z$, wherein $0.75 < x < 0.85$; ~~and $z = (1 - (x + y))$~~ and $x + y + z = 1$ as measured by Rutherford backscattering spectroscopy.

35. (currently amended) The interconnect structure of claim ~~34~~ 32 wherein ~~$0.77 < x < 0.83$~~ $0.02 < y$ 0.06 and $x + y + z = 1$ as measured by Rutherford backscattering spectroscopy.

36. (previously presented) The interconnect structure of claim 32 further comprising a CoWP barrier layer disposed between the copper layer and the metal layer, wherein the CoWP barrier layer consists essentially an electrodeposited CoWP film.

37. (Original) The interconnect structure of claim 32 further comprising a metal cap layer on the CoWP film.

38. (Original) The interconnect structure of claim 32 wherein the CoWP film has a thickness from 5 nm to 50 nm.

39. (Original) The interconnect structure of claim 32 wherein the atom percent phosphorous is measured by Rutherford backscattering spectroscopy.

40. Canceled

41. (Previously presented) The composite material of claim 1, wherein the CoWP film contains from 16.5 atom percent phosphorus to 25 atom percent phosphorus.

42-44. Canceled

45. (Previously presented) The interconnect structure of claim 32, wherein the CoWP film contains from 16.5 atom percent phosphorus to 25 atom percent phosphorus.

46.-51. Canceled